



463202

**Winnebago Landfill  
Northern and Southern Units  
Winnebago County, Illinois**

**Permit Number: 1991-138-LF  
Site Number: 2018080001**

## **Alternate Source Demonstration**

**October 2011**



*Submitted to:*  
Illinois Environmental Protection Agency  
Bureau of Land  
Springfield, Illinois

*Prepared for:*  
Winnebago Landfill  
8403 Lindenwood Road  
Rockford, Illinois



*Prepared by:*  
**ANDREWS**  
**ENGINEERING, INC.**

3300 Ginger Creek Drive  
Springfield, Illinois 62711  
Tel: (217) 787-2334; Fax: (217) 787-9495



October 11, 2011

Stephen F. Nightingale  
Manager, Permit Section  
Bureau of Land  
Illinois Environmental Protection Agency  
1021 North Grand Ave. East  
P.O. Box 19276  
Springfield, IL 62794-9276

Re: 2018080001 – Winnebago County  
Winnebago Landfill – Northern and Southern Units  
Alternate Source Demonstration

Dear Mr. Nightingale:

On behalf of our client, Winnebago Landfill, submitted herein are an original and three copies of an alternate source demonstration in accordance with Condition VIII.15 of Permit No. 1991-138-LF, Modification 50. Application forms (LPC-PA1 and Certification of Authenticity) are provided in Appendix A of the application.

In addition, well abandonment documentation is included for Northern Unit wells G18D and G18S.

Please contact Tom Hilbert at (815) 963-7516 if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Teresa N. Sharp", with a large, stylized loop at the end.

Teresa N. Sharp  
Environmental Scientist

TNS:bjh:sjb

Enclosure(s)

cc: Tom Hilbert – William Charles Waste Companies  
Bernie Shorle – US EPA Region 5

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Appendix B – Potentiometric Surface Maps

Appendix C – Trend Analyses

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Appendix E – Statistical Calculations

Appendix F – Well Abandonment Documentation

## **1. INTRODUCTION**

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Condition No. VIII.15 of Permit No. 1991-138-LF, Modification No. 50 requires that an alternate source demonstration be conducted for all confirmed monitored increases detected in facility monitoring wells or that an assessment monitoring program be implemented to determine whether the facility is the source of the increases. Exceedences that were observed during the second quarter of 2011 were sampled for confirmation during the third quarter 2011 event. This application provides an alternate source demonstration for the 2011 confirmed exceedences. The application forms (Certification of Authenticity and LPC-PA1) are contained in Appendix A.

## **2. BACKGROUND INFORMATION**

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### **2.1 Site Description**

The Winnebago Landfill facility contains three separate disposal areas (Northern and Southern Units, and the North Expansion Unit) authorized under Illinois EPA Permit Nos. 1991-138-LF and 2006-221-LF, respectively. A site map has been provided as Figure 1. The Northern Unit ceased accepting waste on September 8, 2000. The Southern Unit continues to operate in accordance with the current permit. In addition, a North Expansion Unit, located between the existing Northern Unit and Baxter Road, began operation under Illinois Permit No. 2006-221-LF on May 16, 2008. This unit is also shown in Figure 1.

### **2.2 Site Hydrogeological Summary**

The site hydrogeologic characteristics have been accurately determined based on implementation of a series of subsurface investigations, beginning with the initial drilling investigation in 1969 by Testing Engineers, Inc. Subsequent investigations have included advancement of borings, well/piezometer installations for the existing site and facility expansion, and comprehensive groundwater quality testing due to releases by Acme Solvents. Additional hydrogeologic information has been obtained due to development activities of the North Expansion Unit, which includes excavation of materials exposing bedrock and unconsolidated deposits.

#### **2.2.1 Unconsolidated Deposits**

The composition of the unconsolidated deposits, which appear to be glacial outwash, varies with location throughout the facility boundaries. Coarse-grained sand and gravel with occasional silt and/or clay seams typically underlie the Northern Unit. The thickness of the sand and gravel varies from just a few feet beneath the east toe of the waste footprint to approximately 70 feet beneath the western edge of the waste boundary. The sand and gravel thickens to the west, corresponding with the erosion of the underlying dolomite. Unconsolidated sand and gravel glacial drift sediments directly underlay the western portion of the Northern Unit, while fractured dolomite bedrock underlies the eastern portion of the landfill.

#### **2.2.2 Bedrock**

The bedrock consists of dolomite, fractured and weathered to varying extents. Chert layers, chert nodules, and small vugs were commonly noted on boring logs. However, larger voids or karst characteristics were not indicated on the boring logs. The bedrock surface is highly variable throughout the facility. East of the site a dolomite bedrock upland is present and outcrops in the vicinity of the Acme Solvent site and two quarries. This bedrock upland

represents the eastern bedrock escarpment of the Upper Rock buried valley. The site is situated on the eastern edge of the Upper Rock buried bedrock valley. The overburden thickens as the elevation of the bedrock surface decreases to the west. As determined by previous boring investigations, and monitor well and gas probe installations, the bedrock varies from a high near 750 feet above mean sea level (MSL) at the southeast corner of the North Unit to a low of approximately 675 feet above MSL to the west and south of the South Unit.

### **2.2.3 Uppermost Aquifer**

The uppermost aquifer for the site is located within the glaciofluvial sand and gravel deposits and the upper portion of the fractured dolomite bedrock. The saturated sands and gravels, which directly overlie the bedrock, occur in the western two-thirds of the Northern Unit. In locations where there are no saturated glaciofluvial deposits, the uppermost aquifer is located within the dolomite bedrock typically overlain by silty clay deposits. This occurs in the eastern third of the Northern Unit.

### **2.2.4 Groundwater Flow Conditions**

The general flow direction within the uppermost aquifer is westward in the bedrock upland east of the site. Groundwater flow in the unconsolidated sediments is to the west-northwest. Potentiometric surface maps provided in Appendix B indicate groundwater movement is generally west-northwest beneath the Northern Unit. Groundwater elevations obtained from recent monitor wells and piezometers installed west of Kilbuck Creek indicate flow is to the northwest of Kilbuck Creek. Shallow groundwater may discharge to Kilbuck Creek while groundwater in the lower part of the unconsolidated sediments and deeper bedrock flows beneath Kilbuck Creek.

Kilbuck creek is both a gaining and losing stream dependent upon hydrogeologic and atmospheric conditions. During drier periods where the water table drops below the bottom of the creek bed, surface waters feed the groundwater system. During wetter periods where the water table is high (above the bottom of the creek bed) the groundwater system will recharge the stream and wetlands. This fluctuation allows mixing of surface water (and, therefore, surface water constituents) with groundwater (and any groundwater constituents) often on a seasonal basis. In addition, dependent upon the creek stage, the surface waters of both the creek and the wetland mitigation area may be contiguous.

The aquifer system beneath the facility, which includes both the saturated sand and gravel and the upper weathered/fractured part of the dolomite, extends to an approximate depth of 665 feet MSL. East of the landfill and beneath the eastern quarter of the Northern Unit, the water table occurs within the dolomite bedrock. Beneath the western three-fourths of the site and within the Kilbuck Creek Valley, the water table occurs within the sand and gravel deposits. Previous hydrogeologic investigations and evaluations have shown that vertical gradients do exist within the uppermost aquifer but are typically slight at any individual location. Therefore, groundwater elevations from the bedrock wells and wells screened in the unconsolidated materials (sand and gravel) were used to create one potentiometric surface for each quarterly sampling period. As expected, the hydraulic gradients are greater at the east end of the facility where the bedrock is higher, and flat near Kilbuck Creek.

### 3. GROUNDWATER QUALITY

In accordance with 35 Illinois Administrative Code (Ill. Adm. Code) 811.319 and the current permit, the groundwater quality is evaluated on a quarterly basis. Results of the statistical evaluations are reported quarterly in accordance with Condition No. VIII.18. Notification of observed /confirmed increases have been submitted in accordance with Condition No. VIII.14 of the permit.

#### 3.1 Existing Monitor Well Network

The facility has an extensive network of monitoring wells from which groundwater data are obtained. Separate monitor well networks exist for the Northern and Southern Units. The Northern Unit contains 21 groundwater monitoring points, of which five are designated as background groundwater quality wells (upgradient), one is a compliance boundary well at the edge of the zone of attenuation and the remaining wells monitor within the zone of attenuation down- and sidegradient of the landfill. Winnebago Landfill samples 12 additional wells on a quarterly basis as part of the GMZ monitoring network. Each well is identified in Figure 1. The following table provides a list of the monitoring wells for the Northern Unit.

Northern Unit Detection Monitoring Wells (21)	
Upgradient	G09D, G09M, G13S, G13D, G20D
Compliance Boundary	R39S
Zone of Attenuation	G03M, G16M, G17S, G33D, G34D, G35D, G36S
	G37S, G38S, G40S, G41D, G41M, G41S, R42S, G51S
Northern Unit GMZ Only Wells (12)	
Compliance Boundary	G52S, G52M, G54S, G54M
Zone of Attenuation	R03S, G16D, G33S, G34S, G35S, G37D, G130, G50S

The Southern Unit contains 17 permitted groundwater monitoring points. Six are designated as background groundwater quality wells (upgradient); two (G13S and G13D) are also background wells for the Northern Unit. Although, monitoring wells R05S, G29S, and G29D are permitted as zone of attenuation wells, based on the potentiometric surface maps (Appendix B), these wells are also located upgradient to the waste units. The wells have been used previously in the derivation of the background/applicable groundwater quality standards (AGQS) values for the unit. The following table lists the monitoring wells for the Southern Unit.

Southern Unit Detection Monitoring Wells (17)	
Upgradient	R11S, G11D, G13S, G13D, R22S, G22D
Zone of Attenuation	R05S, G23D, R24D, R25D, R27D, R28D, G29S, G29D, G26S, G26D, G49D

#### 3.2 Background Concentrations

The initial background concentrations (AGQSS) for the Northern Unit were determined from data obtained from four wells located east of Lindenwood Road on the Acme Solvent property (B-8, STI-2S, STI-2I, and STI-2D). Background sampling occurred from 1990 through 1992. The AGQSS were proposed in the initial significant modification application and subsequent

addenda. Addendum 3 to the initial significant modification, dated February 10, 1993, provided the first full listing of routine AGQS values derived from wells G09M, G09D, G13S, and G13D. Since the time the background concentrations were obtained, remediation at the Acme Solvent facility ceased and an additional quarry began operation north/east of Acme Solvents (the facilities are located upgradient to the landfill). The approximate location of Acme Solvents and the quarries are shown in Figure 2. These activities have likely affected the current background conditions. To account for changes in the background groundwater quality since 1993, revised AGQS values for 60 G1 and G2 List parameters were submitted and subsequently approved on March 26, 2004 with the issuance of Modification 24 to the current permit.

The initial AGQSs for the Southern Unit were determined from data obtained from the permitted upgradient/background wells. However, revisions to several background values have included data from wells R05S, G29S, and G29D as part of the statistical derivation. Although permitted as zone of attenuation wells, these wells are actually hydraulically upgradient to the Southern Unit and provide additional information on the background groundwater quality. As mentioned in Section 3.1 above, monitoring wells G13S and G13D are contained in the monitoring well networks for both the Northern and Southern Units. The groundwater quality for these two wells along with R05S (Southern Unit) and G16D (Northern Unit) are not evaluated with respect to the permitted AGQSs but are reviewed based on trend analyses in accordance with Condition VIII.25 of Permit No. 1991-138-LF (Modification No. 50).

### 3.3 Confirmed Increases

The table below lists the parameters and wells that have been confirmed to exceed the criteria listed in Condition VIII.13 during the second quarter 2011 confirmed sampling event at Winnebago Landfill. The historical sampling results for each of the exceeding wells/parameters are provided as Table 1. Each confirmed increase is discussed in detail in the sections below. In addition, graphical trend analyses have also been conducted for each of the confirmed exceedences and are provided in Appendix C.

Unit	Well	Location	Confirmed Increases
North	G09M	Upgradient	Specific Conductance
South	R11S	Upgradient	Trichloroethene

#### 3.3.1 Specific Conductance

Specific conductance at Northern Unit upgradient well G09M exceeded the AGQS value (2,386.55 umhos/cm) during second quarter 2011 (2,820 umhos/cm) and was confirmed third quarter (2,900 umhos/cm). The overall trend for specific conductance at G09M is sporadic. The upgradient position of the well, indicates that the concentrations of specific conductance are not related to waste disposal activities but to natural fluctuation in the groundwater quality. To account for the change in background groundwater quality, a revised interwell value (3,820 umhos/cm) is proposed for specific conductance at the Northern Unit. Eight consecutive quarters of data from upgradient wells G09D, G09M, G13S, G13D, and G20D were used to calculate the revised interwell value. The statistical method and interwell calculations are provided in Appendix D and Appendix E, respectively.

#### 3.3.2 Trichloroethene

The second quarter 2011 (1.1 ug/l) concentration of trichloroethene exceeded the preceding fourth quarter 2010 (< 1 ug/l) concentration at Southern Unit upgradient well R11S. The



increase was confirmed third quarter 2011 (1.3 ug/l). All concentrations were below the AGQS (10 ug/l). The increase above the previously recorded value indicates a fluctuation in the upgradient groundwater quality. Trichloroethene is a chlorinated solvent; its presence in upgradient groundwater indicates it is likely attributable to the Acme Solvents facility and not the landfill. However, since the current concentrations are below the AGQS/background values, no further action is necessary for this parameter.

#### **4. RECOMMENDATIONS AND CONCLUSIONS**

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Based on an evaluation of the historic sampling results, trend analyses, and background information, the confirmed increases are not associated with the landfill but appear to be related to upgradient groundwater quality. A revised interwell value has been proposed (3,820 umhos/cm) for specific conductance at the Northern Unit. No further action or assessment is required for trichloroethene at Southern Unit upgradient well R11S. This alternate source demonstration fulfills the requirements of Condition No. VIII.15 of Permit No. 1991-138-LF Modification No 50.

#### **5. WELL ABANDONMENT DOCUMENTATION**

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Northern unit monitoring wells G18D and G18S were abandoned on July 25, 2011 as part of Phase 6 construction. Abandonment of wells G18D and G18S was performed under the supervision of a representative from the Winnebago County Health Department. The well abandonment forms are provided in Appendix F.

## TABLES

**Table 1**  
**Winnebago Landfill**  
**Historical Analytical**

Unit	Well ID	Parameter	Units	AGQS	1stQtr97	2ndQtr97	3rdQtr97	4thQtr97	1stQtr98	2ndQtr98	3rdQtr98	4thQtr98	1stQtr99	2ndQtr99
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1600	1560	1550	1210	1620	1340	1700	1450	1710	1640
Southern	R11S	Trichloroethene	ug/l	10						< 5				3.3

Unit	Well ID	Parameter	Units	AGQS	3rdQtr99	4thQtr99	1stQtr00	2ndQtr00	3rdQtr00	4thQtr00	1stQtr01	2ndQtr01	3rdQtr01	4thQtr01
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1510	1908	1652		1736	1399	1765	1455	1930	1150
Southern	R11S	Trichloroethene	ug/l	10				3.6				2.2		

Unit	Well ID	Parameter	Units	AGQS	1stQtr02	2ndQtr02	3rdQtr02	4thQtr02	1stQtr03	2ndQtr03	3rdQtr03	4thQtr03	1stQtr04	2ndQtr04
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1100	1170	1310	1400	1370	430	1560	1170	1570	1000
Southern	R11S	Trichloroethene	ug/l	10		2				2	2	1	2	2

Unit	Well ID	Parameter	Units	AGQS	2ndQtr04re	3rdQtr04	3rdQtr04re	4thQtr04	1stQtr05	2ndQtr05	3rdQtr05	3rdQtr05re	4thQtr05	1stQtr06
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1875	1840	1515	1765	1520	1220	1540	1910	1164	1245
Southern	R11S	Trichloroethene	ug/l	10		2				2				

Unit	Well ID	Parameter	Units	AGQS	2ndQtr06	2ndQtr06re	3rdQtr06	3rdQtr06re	4thQtr06	1stQtr07	1stQtr07re	2ndQtr07	3rdQtr07	4thQtr07
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1740	962	2490	1445	1000	2460	1567	944	1234	1472
Southern	R11S	Trichloroethene	ug/l	10	< 1							< 1		

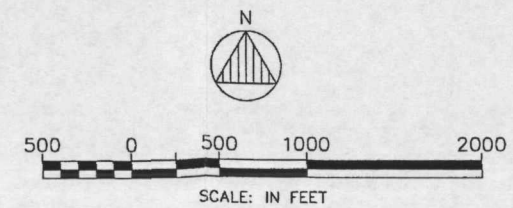
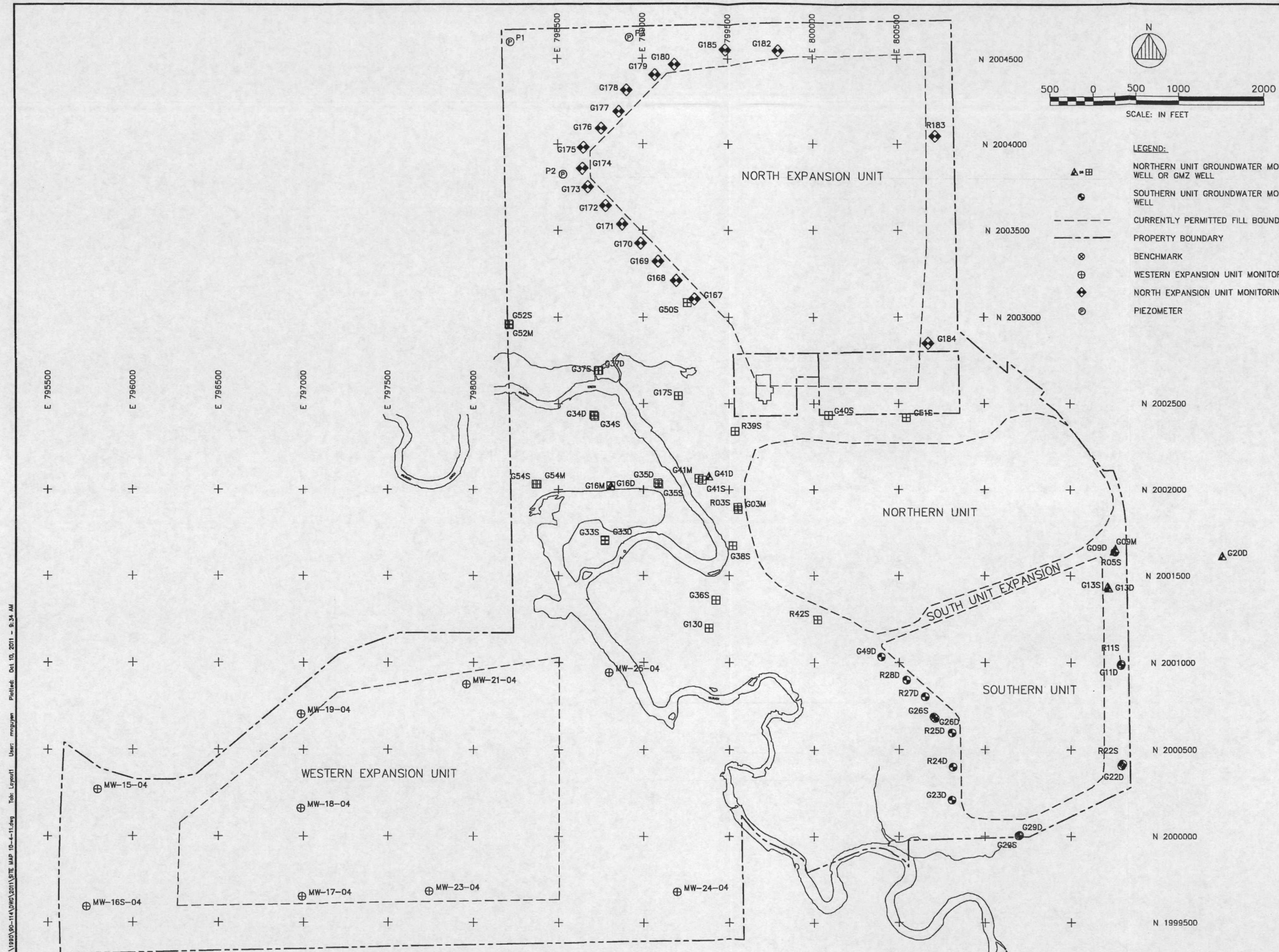
Unit	Well ID	Parameter	Units	AGQS	1stQtr08	2ndQtr08	3rdQtr08	4thQtr08	1stQtr09	2ndQtr09	3rdQtr09	4thQtr09	1stQtr10	2ndQtr10
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1495	535	1068	699	1818	2790	702	876	1482	1819
Southern	R11S	Trichloroethene	ug/l	10		< 1		< 1		< 1		< 1		< 1

Unit	Well ID	Parameter	Units	AGQS	3rdQtr10	4thQtr10	1stQtr11	2ndQtr11	3rdQtr11
Northern	G09M	Specific Conductance (field)	umhos	2386.55	1197	983	1533	2820	2900
Southern	R11S	Trichloroethene	ug/l	10		< 1		1.1	1.3

Note:  
A highlighted cell indicates an exceedence of the interwell value.  
Andrews Engineering, Inc.

## FIGURES





LEGEND:

NORTHERN UNIT GROUNDWATER MONITORING  
WELL OR GMZ WELL

SOUTHERN UNIT GROUNDWATER MONITORING  
WELL

PROPERTY BOUNDARY

WESTERN EXPANSION UNIT MONITORING WELL

NORTH EXPANSION UNIT MONITORING WELL

PIEZOMETER

NORTH EXPANSION UNIT

SOUTHERN UNIT



**ANDREWS**  
**ENGINEERING, INC.**  
3300 Ginger Creek Drive, Springfield, IL 62711-7233  
Tel (217) 787-2334 Fax (217) 787-9499

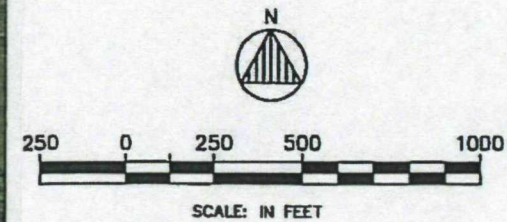
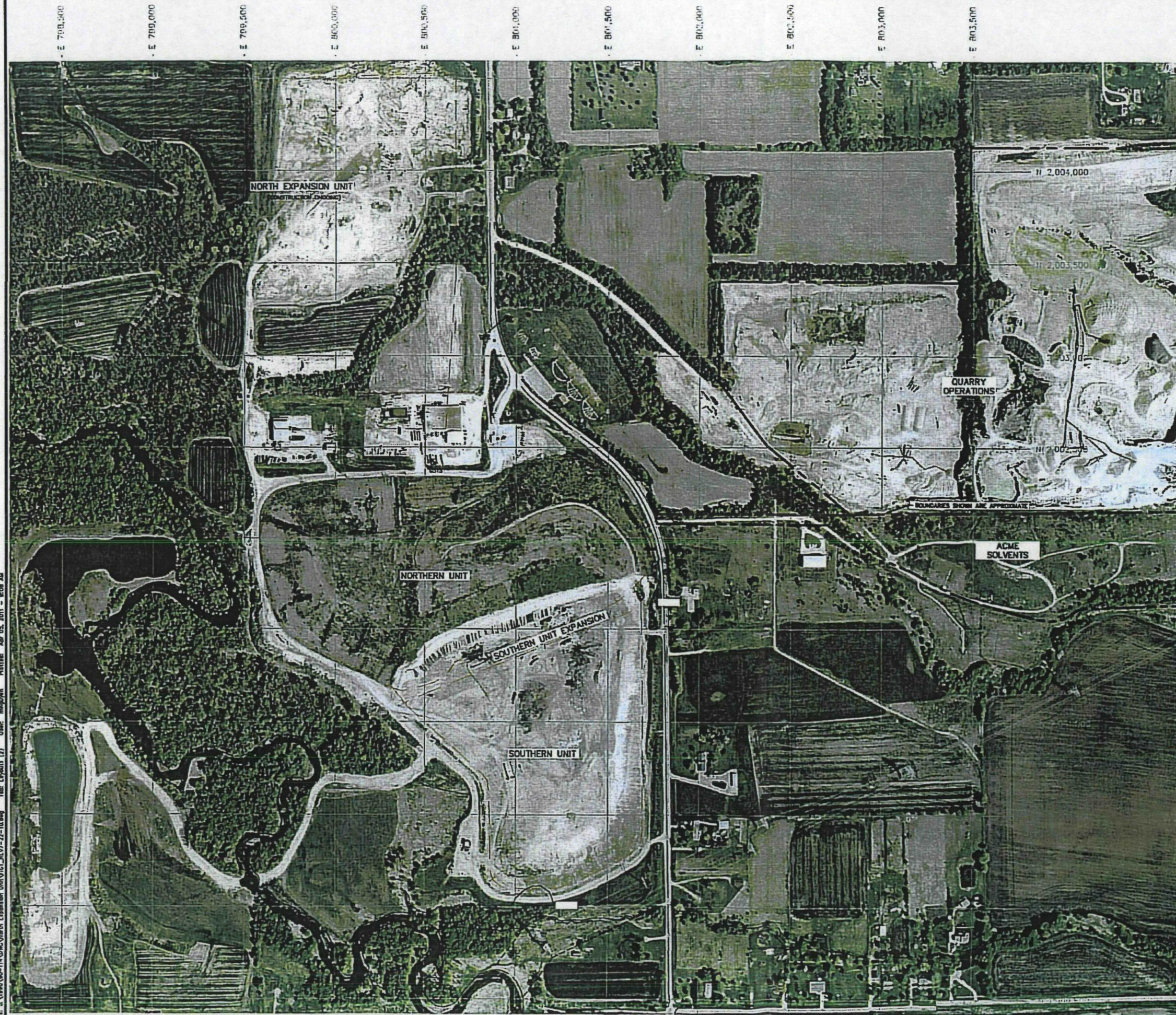
3300 Ginger Creek Drive, Springfield, IL 62711-7233  
Tel (217) 787-2334 Fax (217) 787-9495  
Pontiac, IL • Naperville, IL • Indianapolis, IN • Warrenton, MO

### SITE MAP

DATE:	OCTOBER 2011
PROJECT ID:	1990-114
SHEET NUMBER:	

**Bill Andrews Engineering, Inc.**





NOTE:  
BACKGROUND IMAGE EXTRACTED FROM GOOGLE EARTH,  
APRIL 23, 2008.

LEGEND	
---	CURRENTLY PERMITTED FILL BOUNDARY

REVISIONS		NO.	DATE	DESCRIPTION	BY
		1	5/1/10	ADDED COORDINATE SYSTEM GRID	MEV
<div> <div> <p><b>ANDREWS ENGINEERING, INC.</b> 1300 Chicago Creek Drive, Springfield, IL 62761-7233 Tel: (217) 787-2334 Fax: (217) 787-9485 Peoria, IL • Springfield, IL • Indianapolis, IN</p> </div> <div> <p><b>SITE LOCATION MAP</b> PLANS PREPARED FOR WINNEBAGO LANDFILL ROCKFORD, WINNEBAGO COUNTY, ILLINOIS</p> </div> </div>					
DATE:		AUGUST 2010		PROJECT NO:	
				90-114	
				SHEET NUMBER:	
				FIG. 2	
APPROVED BY:		THIS	DESIGNED BY:	THIS	DRAWN BY:
					MPN
©2010 Andrews Engineering, Inc.					



**APPENDIX A**  
**APPLICATION FORMS**



Illinois  
Environmental  
Protection Agency

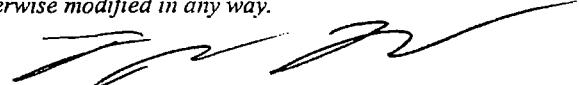
Bureau of Land  
1021 North Grand Avenue East  
Box 19276  
Springfield, IL 62794-9276

### Certification of Authenticity of Official Forms

This form must accompany any application submitted to the Illinois EPA Bureau of Land, Division of Land Pollution Control, Permit Section on forms other than the official copy printed and provided by the Illinois EPA. The only allowed changes to the form are in spacing, fonts, and the addition of the information provided. Any additions must be underlined. The forms would not be considered identical if there is any change to, addition or deletion of words on the form or to the language of the form.

The same individuals that sign the application form it accompanies must sign the following certification.

*I hereby certify under penalty of law that I have personally examined, and am familiar with the application form or forms and all included supplemental information submitted to the Illinois EPA herewith, and that the official Illinois Environmental Protection Agency application form or forms used herein is or are identical in all respects to the official form or forms provided by the Illinois EPA Bureau of Land Permit Section, and has not or have not been altered, amended, or otherwise modified in any way. I further certify under penalty of law that any attached or included electronic data version of the application form or forms complies with the official Illinois EPA's Electronic version thereof, and is or are identical in all respects to the official electronically downloadable form or forms provided by the Illinois EPA Bureau of Land Permit Section, and has not or have not been altered, amended or otherwise modified in any way.*

By:   
Owner Signature

10-11-2011  
(date)

Engineering Manager  
Title

By:   
Operator Signature

10-11-2011  
(date)

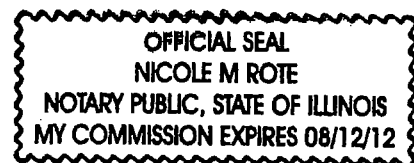
Engineering Manager  
Title

Engineer Signature  
(if necessary)

OCTOBER 12, 2011  
(date)

*Subscribed and Sworn to Before Me,  
a Notary Public in and for the  
above-mentioned County and State.*

  
Notary Public



My Commission Expires: 8-12-12

[Notary Seal]





# Illinois Environmental Protection Agency

Page 1 of 4

Bureau of Land • 1021 N. Grand Avenue E. • Box 19276 • Springfield • Illinois • 62794-9276

## General Application for Permit (LPC - PA1)

This form must be used for any application for permit, except for landscape waste composting or hazardous waste management facilities regulated in accordance with RCRA, Subtitle C from the Bureau of Land. One original, and two copies, or three if applicable, of all permit application forms must be submitted. Attach the original and appropriate number of copies of any necessary plans, specifications, reports, etc. to fully support and describe the activities and modifications being proposed. Attach sufficient information to demonstrate the compliance with all regulatory requirements. Incomplete applications will be rejected.

Note: Permit applications which are hand-delivered to the Bureau of Land, Permit Section must be delivered to the above address between 8:30 am and 5:00 pm, Monday through Friday (excluding State holidays).

NOTE: Please complete this form online, save a copy locally, print and submit it to the Permit Section #33, at the above address.

### I. Site Identification:

Site Name: Winnebago Landfill IEPA ID Number: 2018080001  
Street Address: 8403 Lindenwood Road P.O. Box: \_\_\_\_\_  
City: Rockford State: IL Zip Code: 61109 County: Winnebago  
Existing DE/OP Permit Numbers (if applicable): 1991-138-LF

### 2. Owner/Operator Identification:

Owner		Operator	
Name:	<u>Winnebago Landfill Company, LLC</u>	Name:	<u>Winnebago Reclamation Service, Inc.</u>
Street Address:	<u>5450 Wansford Way, Suite 201B</u>	Street Address:	<u>5450 Wansford Way, Suite 201B</u>
PO Box:	_____	PO Box:	_____
City:	<u>Rockford</u> State: <u>IL</u>	City:	<u>Rockford</u> State: <u>IL</u>
Zip Code:	<u>61109</u> Phone: _____	Zip Code:	<u>61109</u> Phone: _____
Contact:	<u>Tom Hilbert</u>	Contact:	<u>Tom Hilbert</u>
Email Address:	<u>thilbert@rresvcs.com</u>	Email Address:	<u>thilbert@rresvcs.com</u>

#### TYPE OF SUBMISSION/REVIEW PERIOD:

New Landfill/180 days (35 IAC Part 813) \_\_\_\_\_  
Landfill Expansion/180 days (35 IAC Part 813) \_\_\_\_\_  
Sig. Mod. to Operate/90 days (35 IAC Part 813) \_\_\_\_\_  
Other Sig. Mod./90 days (35 IAC Part 813) \_\_\_\_\_  
Renewal of Landfill/90 days (35 IAC Part 813) \_\_\_\_\_  
Developmental/90 days (35 IAC Part 807) \_\_\_\_\_  
Operating/45 days (35 IAC Part 807) \_\_\_\_\_  
Supplemental/90 days (35 IAC Part 807) \_\_\_\_\_  
Permit Transfer/90 days (35 IAC Part 807) \_\_\_\_\_  
Renewal of Experimental Permit (35 IAC Part 807) \_\_\_\_\_

#### TYPE OF FACILITY:

☐ Landfill  
☐ Land Treatment  
☐ Transfer Station  
☒ Treatment Facility  
☐ Storage  
☐ Incinerator  
☐ Composting  
☐ Recycling/Reclamation  
☐ Other (Specify) \_\_\_\_\_

#### TYPE OF WASTE:

☒ General Municipal Refuse  
☐ Hazardous  
☒ Special (Non-Hazardous)  
☐ Chemical Only (exec. putrescible)  
☐ Inert Only (exec. chem. & putrescible)  
☐ Used Oil  
☐ Potentially Infectious Medical Waste  
☐ Landscape/Yard Waste  
☐ Other (Specify) \_\_\_\_\_

### 3. Description of this Permit Request:

Alternate source demonstration for second quarter 2011 confirmed exceedences in accordance with Condition VIII.15 (Modification No. 50). Well abandonment documentation for wells G18S and G18D are also included in this submittal.

#### 4. Completeness Requirements

The following items must be checked Yes, No or N/A. Each item will be reviewed for completeness by the log clerk. Blank items will result in rejection of the application. Please refer to the instructions for further guidance.

1. Have all required public notice letters been mailed in accordance with the LPC-PA16 instructions? ☒ Yes ☐ No ☐ N/A

(If so, provide a list of those recipients of the required public notice letters for Illinois EPA retention. Such retention shall not imply any Illinois EPA review and/or confirmation of the list.)

##### Public Notice Recipients

Name: Dave Syverson Title: Senator - District 34  
 Street Address: 200 South Wyman Street, Suite 302 P.O. Box: \_\_\_\_\_  
 City: Rockford State: IL Zip Code: 61101 Phone: \_\_\_\_\_

Name: Charles Jefferson Title: Representative - District 67  
 Street Address: 200 South Wyman Street, Suite 304 P.O. Box: \_\_\_\_\_  
 City: Rockford State: IL Zip Code: 61101 Phone: \_\_\_\_\_

Name: Joseph Bruscato Title: State's Attorney  
 Street Address: 400 West State Street P.O. Box: \_\_\_\_\_  
 City: Rockford State: IL Zip Code: 61101 Phone: \_\_\_\_\_

Name: Scott Christiansen Title: County Chairman  
 Street Address: 404 Elm Street, Room 504 P.O. Box: \_\_\_\_\_  
 City: Rockford State: IL Zip Code: 61101 Phone: \_\_\_\_\_

Name: Village of New Milford Title: Village Clerk  
 Street Address: 6771 11th Street P.O. Box: \_\_\_\_\_  
 City: Rockford State: IL Zip Code: 61109 Phone: \_\_\_\_\_

Name: Village of Davis Junction Title: Village Clerk  
 Street Address: 106 North Elm Street P.O. Box: 207  
 City: Davis Junction State: IL Zip Code: 61020 Phone: \_\_\_\_\_

Name: Cherry Valley Township Title: \_\_\_\_\_  
 Street Address: 4875 Blackhawk Road P.O. Box: \_\_\_\_\_  
 City: Rockford State: IL Zip Code: 61109 Phone: \_\_\_\_\_

2. a. Is the Siting Certification Form (LPC-PA8) completed and enclosed?

☐ Yes ☒ No ☐ N/A

- b. Is siting approval currently under litigation?

☐ Yes ☒ No ☐ N/A

3. a. Is a closure, and if necessary a post-closure plan covering these activities being submitted, or ☐ Yes ☒ No ☐ N/A Page 3 of 4

b. has one already been approved? If yes, provide the permit number: 1991-138-1 F

4. a. For waste disposal sites, only: Has any employee, owner, operator, officer or director of the owner or operator had a prior conduct certification denied, canceled or revoked? ☐ Yes ☒ No ☐ N/A

b. Have you included a demonstration of how you comply or intend to comply with 35 Ill. Adm. Code 745? ☐ Yes ☐ No ☒ N/A

5. a. Is land ownership held in beneficial trust? ☐ Yes ☒ No ☐ N/A

b. If yes, is a beneficial trust certification form (LPC-PA9) completed and enclosed? ☐ Yes ☐ No ☒ N/A

6. a. Does the application contain information or proposals regarding the hydrogeology; groundwater monitoring, modeling or classification; a groundwater impact assessment; or vadose zone monitoring for which you are requesting approval? ☒ Yes ☐ No ☐ N/A

b. If yes, have you submitted a third copy of the application (4 total) and supporting documents? ☒ Yes ☐ No ☐ N/A

**5. Signatures:**

Original signatures are required. Signature stamps or applications transmitted electronically or by FAX are not acceptable.

All applications shall be signed by the person designated below as a duly authorized representative of the owner an/or operator.

Corporation - By a principal executive officer of the level of vice-president or above.

Partnership or Sole Proprietorship - By a general partner or the proprietor, respectively.

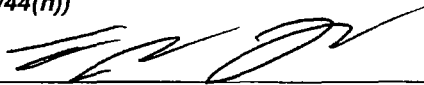
Government - By either a principal executive officer or a ranking elected official.

A person is a duly authorized representative of the owner and operator only if:

1. They meet the criteria above or the authorization has been granted in writing by a person described above; and
2. Is submitted with this application (a copy of a previously submitted authorization can be used).

I hereby affirm that all information contained in this application is true and accurate to the best of my knowledge and belief. I do herein swear that I am a duly authorized representative of the owner/operator and I am authorized to sign this permit application form.

**Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))**



Owner Signature:

10-11-2011

Date:

Thomas Hilbert

Printed Name:


Eng. Manager

Title:

Notary: Subscribed and Sworn before me this 11<sup>th</sup> day of October 2011.

My commission expires on: 8-12-12

OFFICIAL SEAL  
NICOLE M ROTE  
NOTARY PUBLIC, STATE OF ILLINOIS  
MY COMMISSION EXPIRES 08/12/12

  
Signature & Stamp/Seal of Notary Public



Operator Signature:

10-11-2011

Date:

Thomas Hilbert

Printed Name:

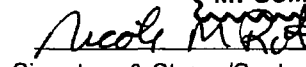
Eng. Mgr.

Title:

Notary: Subscribed and Sworn before me this 11<sup>th</sup> day of October 2011.

My commission expires on: 8-12-12

OFFICIAL SEAL  
NICOLE M ROTE  
NOTARY PUBLIC, STATE OF ILLINOIS  
MY COMMISSION EXPIRES 08/12/12

  
Signature & Stamp/Seal of Notary Public

Engineer's Name: JEREMY C. POETZSCHER

Engineer's Title: PROJECT ENGINEER

Company: ANDREWS ENGINEERING, INC.

Registration Number: 062-061274

Street Address: 3300 GLENDA CRANE DRIVE

PO Box: \_\_\_\_\_

City: SPRINGFIELD State: IL

Zip Code: 62711

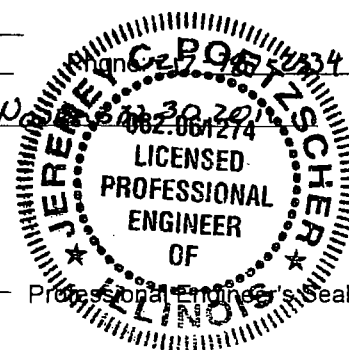
Email Address: jpoetzsch@andrews-eng.com

License Expiration Date: 08-12-2014

Signature: 

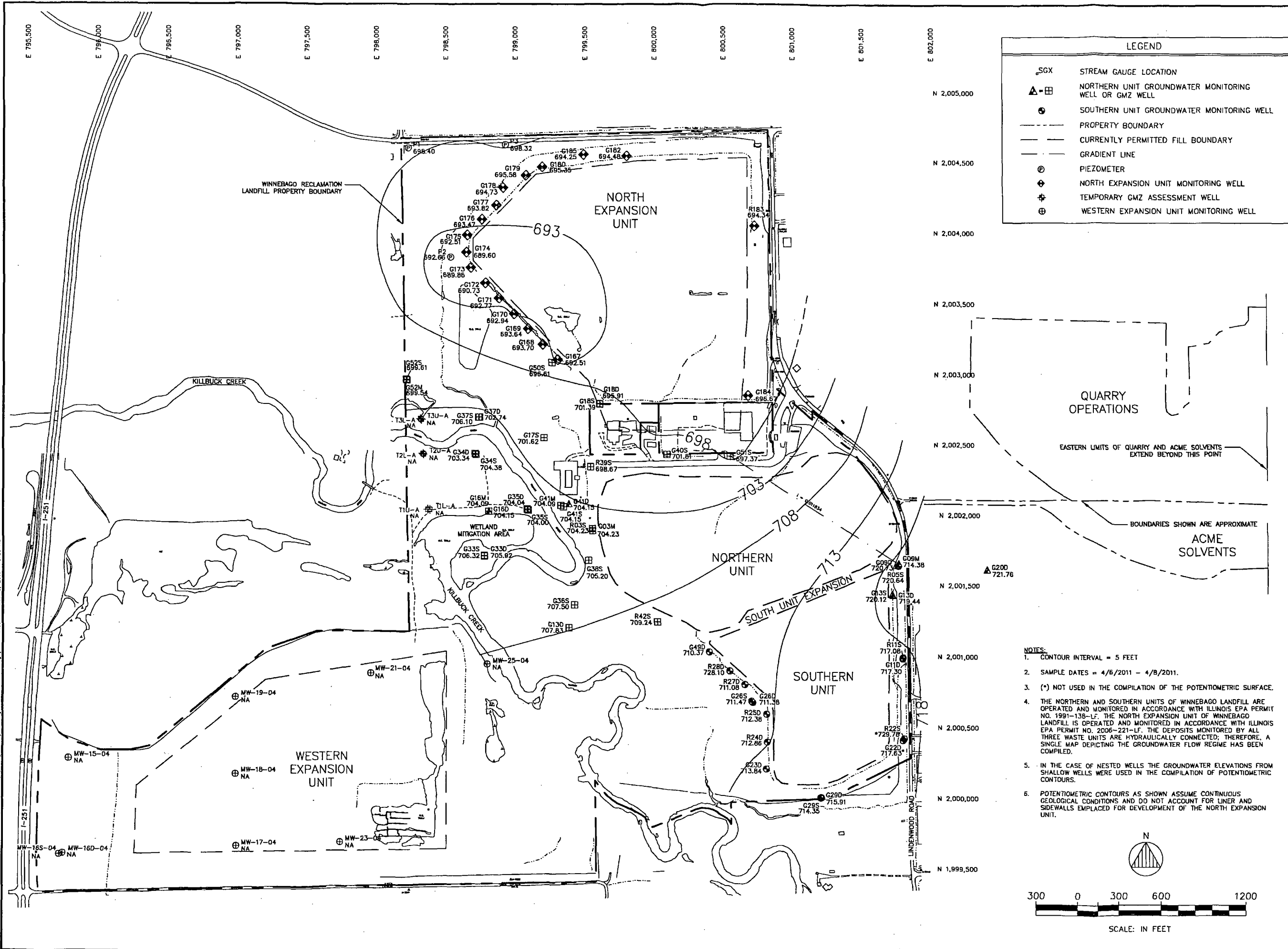
Date: 07/31/12, 2011

Professional Engineer's Seal:



**APPENDIX B**  
**Potentiometric Surface Maps**





REVISIONS		NO.	DATE	DESCRIPTION

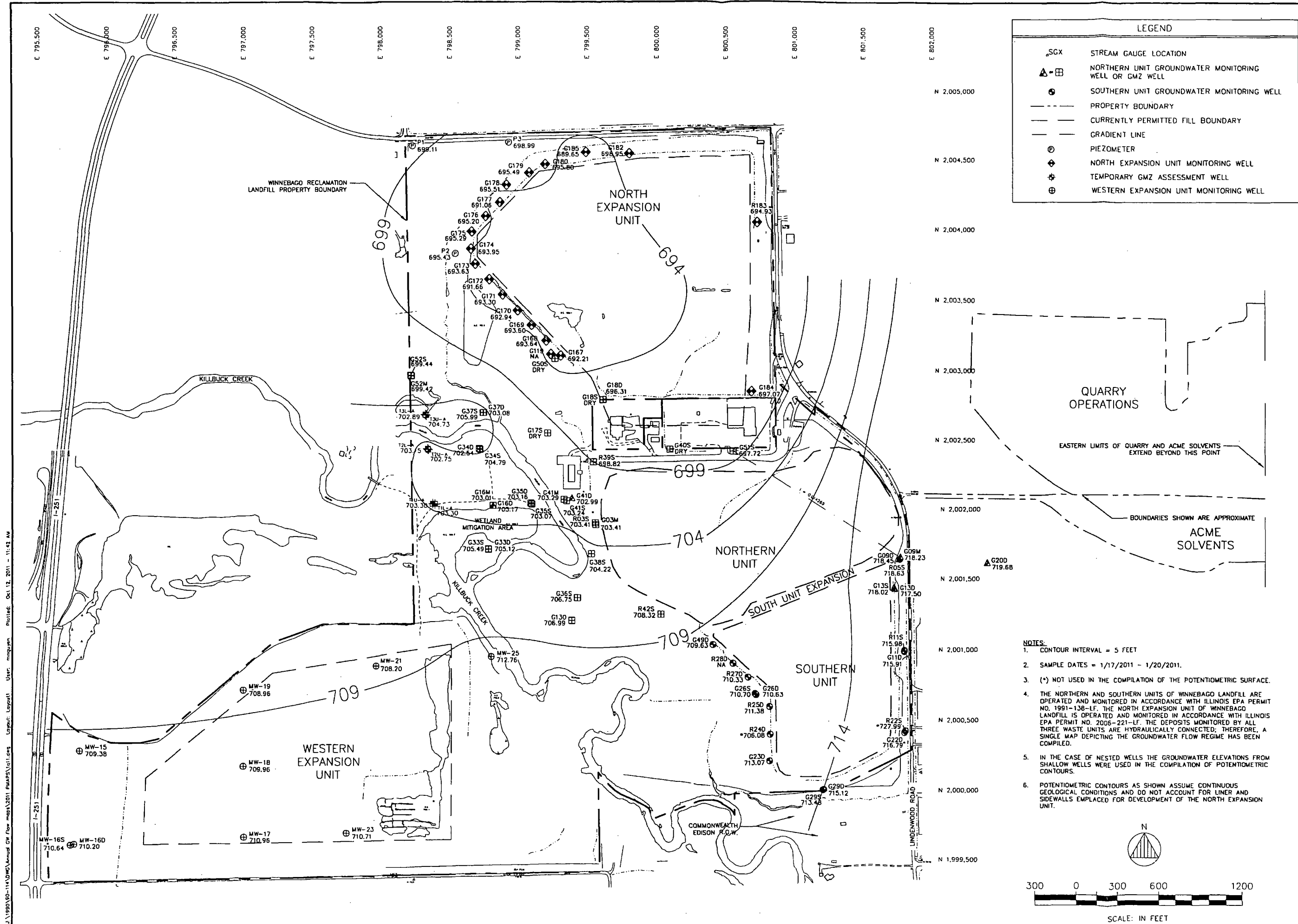
**ANDREWS ENGINEERING, INC.**  
3300 Grogan Creek Drive, Springfield, IL 62711-7233  
Tel (217) 787-2334 Fax (217) 787-9495  
Pontiac, IL • Naperville, IL • Indianapolis, IN • Warren, MO

APPROVED BY: JLR DESIGNED BY: JLR DRAWN BY: MPN

POTENTIOMETRIC SURFACE MAP  
2ND QUARTER 2011

PLANS PREPARED FOR  
WINNEBAGO LANDFILL  
ROCKFORD, WINNEBAGO COUNTY, ILLINOIS

DATE: JULY 2011  
PROJECT ID: 90-114  
SHEET NUMBER:  
**2011**



LEGEND	
SGX	STREAM GAUGE LOCATION
▲-□	NORTHERN UNIT GROUNDWATER MONITORING WELL OR GMZ WELL
●	SOUTHERN UNIT GROUNDWATER MONITORING WELL
---	PROPERTY BOUNDARY
---	CURRENTLY PERMITTED FILL BOUNDARY
---	GRADIENT LINE
⊙	PIEZOMETER
◆	NORTH EXPANSION UNIT MONITORING WELL
⊕	TEMPORARY GMZ ASSESSMENT WELL
⊕	WESTERN EXPANSION UNIT MONITORING WELL

- NOTES:
1. CONTOUR INTERVAL = 5 FEET
  2. SAMPLE DATES = 1/17/2011 - 1/20/2011.
  3. (\*) NOT USED IN THE COMPILATION OF THE POTENTIOMETRIC SURFACE.
  4. THE NORTHERN AND SOUTHERN UNITS OF WINNEBAGO LANDFILL ARE OPERATED AND MONITORED IN ACCORDANCE WITH ILLINOIS EPA PERMIT NO. 1991-138-LF. THE NORTH EXPANSION UNIT OF WINNEBAGO LANDFILL IS OPERATED AND MONITORED IN ACCORDANCE WITH ILLINOIS EPA PERMIT NO. 2006-221-LF. THE DEPOSITS MONITORED BY ALL THREE WASTE UNITS ARE HYDRAULICALLY CONNECTED; THEREFORE, A SINGLE MAP DEPICTING THE GROUNDWATER FLOW REGIME HAS BEEN COMPILED.
  5. IN THE CASE OF NESTED WELLS THE GROUNDWATER ELEVATIONS FROM SHALLOW WELLS WERE USED IN THE COMPILATION OF POTENTIOMETRIC CONTOURS.
  6. POTENTIOMETRIC CONTOURS AS SHOWN ASSUME CONTINUOUS GEOLOGICAL CONDITIONS AND DO NOT ACCOUNT FOR LINER AND SIDEWALLS EMPLACED FOR DEVELOPMENT OF THE NORTH EXPANSION UNIT.

REVISIONS		NO.	DATE	DESCRIPTION

**ANDREWS ENGINEERING, INC.**  
3300 Ginger Creek Drive, Springfield, IL 62711-7233  
Tel (217) 787-2334 Fax (217) 787-9495  
Pontiac, IL - Naperville, IL - Indianapolis, IN - Warrenton, MO

POTENTIOMETRIC SURFACE MAP  
1ST QUARTER 2011

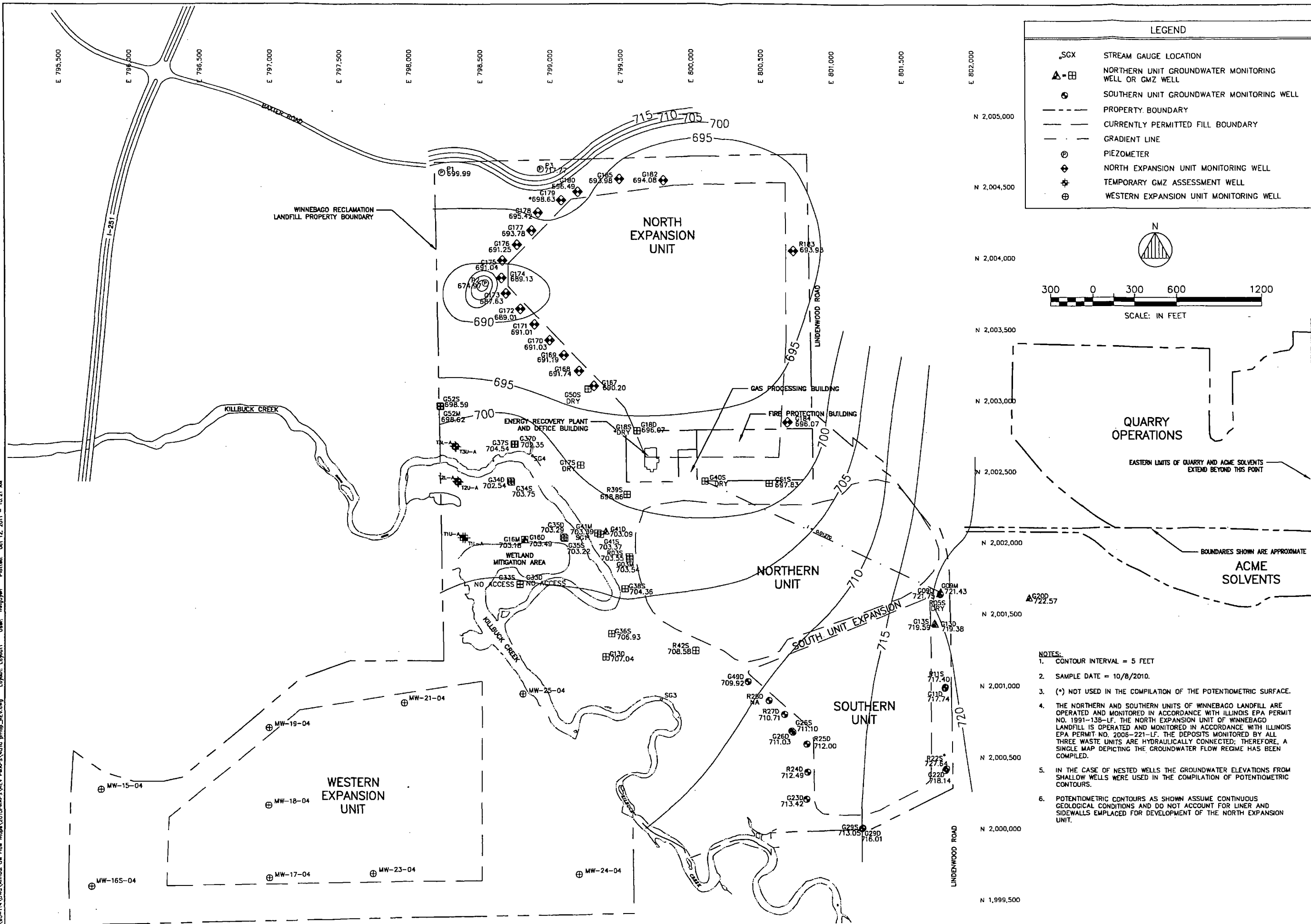
PLANS PREPARED FOR  
WINNEBAGO LANDFILL  
ROCKFORD, WINNEBAGO COUNTY, ILLINOIS

DATE:	FEBRUARY 2010
PROJECT ID:	90-114
SHEET NUMBER:	1011

APPROVED BY: JLR DESIGNED BY: JLR DRAWN BY: MPN  
1320 Andrews Engineering Inc.



File: J:\1900\90-114\DWG\Annual GW Flow map\300QUARTERS\REV PLANS\4Q10 pmap\_REV.dwg Layout: Layout1 User: mapuser Plotted: Oct 12, 2011 10:21 AM



REVISIONS	
NO.	DATE

**ANDREWS ENGINEERING, INC.**  
3300 Ginger Creek Drive, Springfield, IL 62711-7233  
Tel (217) 787-2334 Fax (217) 787-9495  
Pontiac, IL • Naperville, IL • Indianapolis, IN • Warrenville, MO

**POTENTIOMETRIC SURFACE MAP**  
4TH QUARTER 2010

PLANS PREPARED FOR  
WINNEBAGO LANDFILL  
ROCKFORD, WINNEBAGO COUNTY, ILLINOIS

APPROVED BY: JLR DESIGNED BY: JLR DRAWN BY: MPN

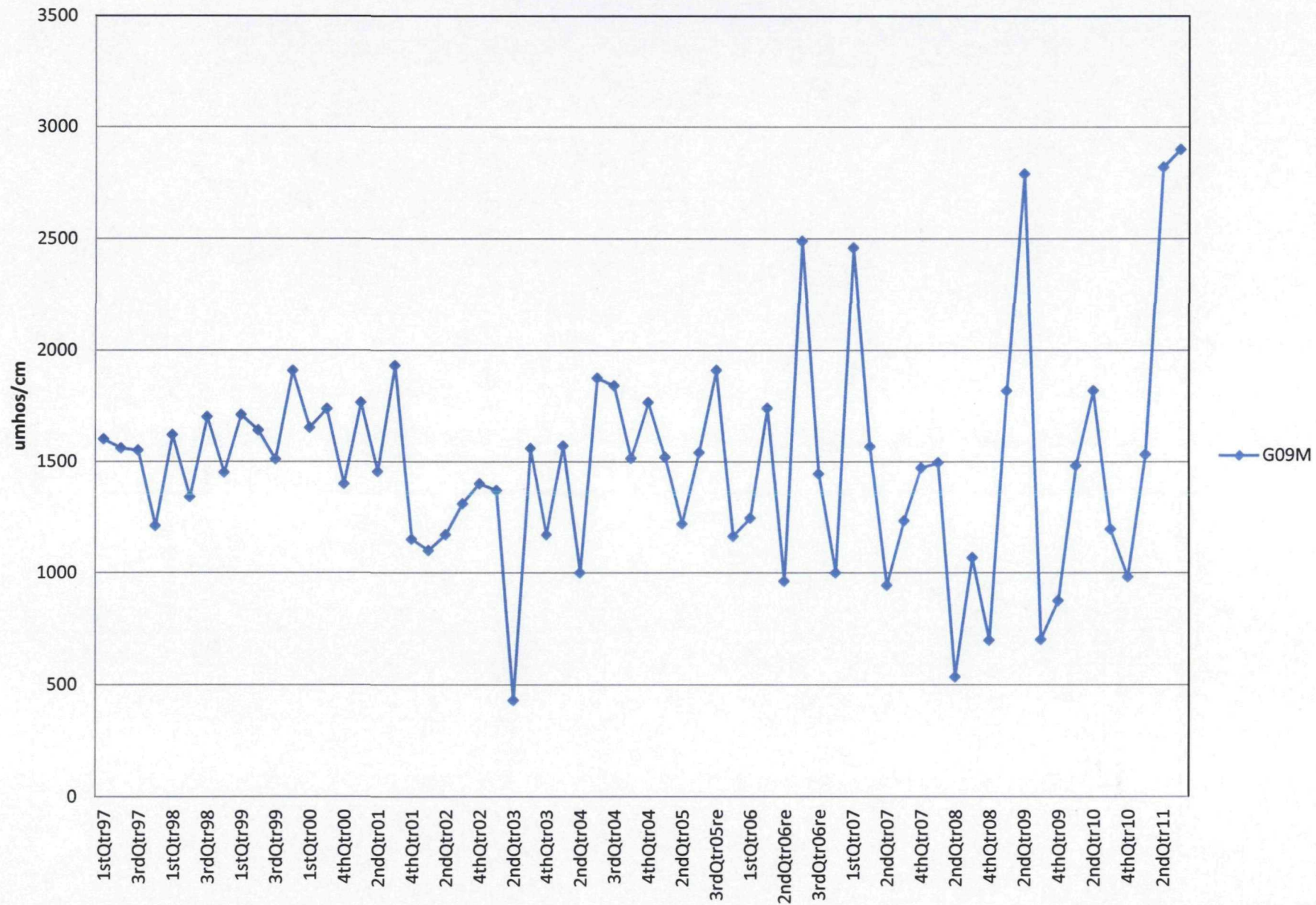
DATE: DECEMBER 2010  
PROJECT ID: 90-114  
SHEET NUMBER: 4Q10

© 2010 Andrews Engineering, Inc.

## **APPENDIX C**

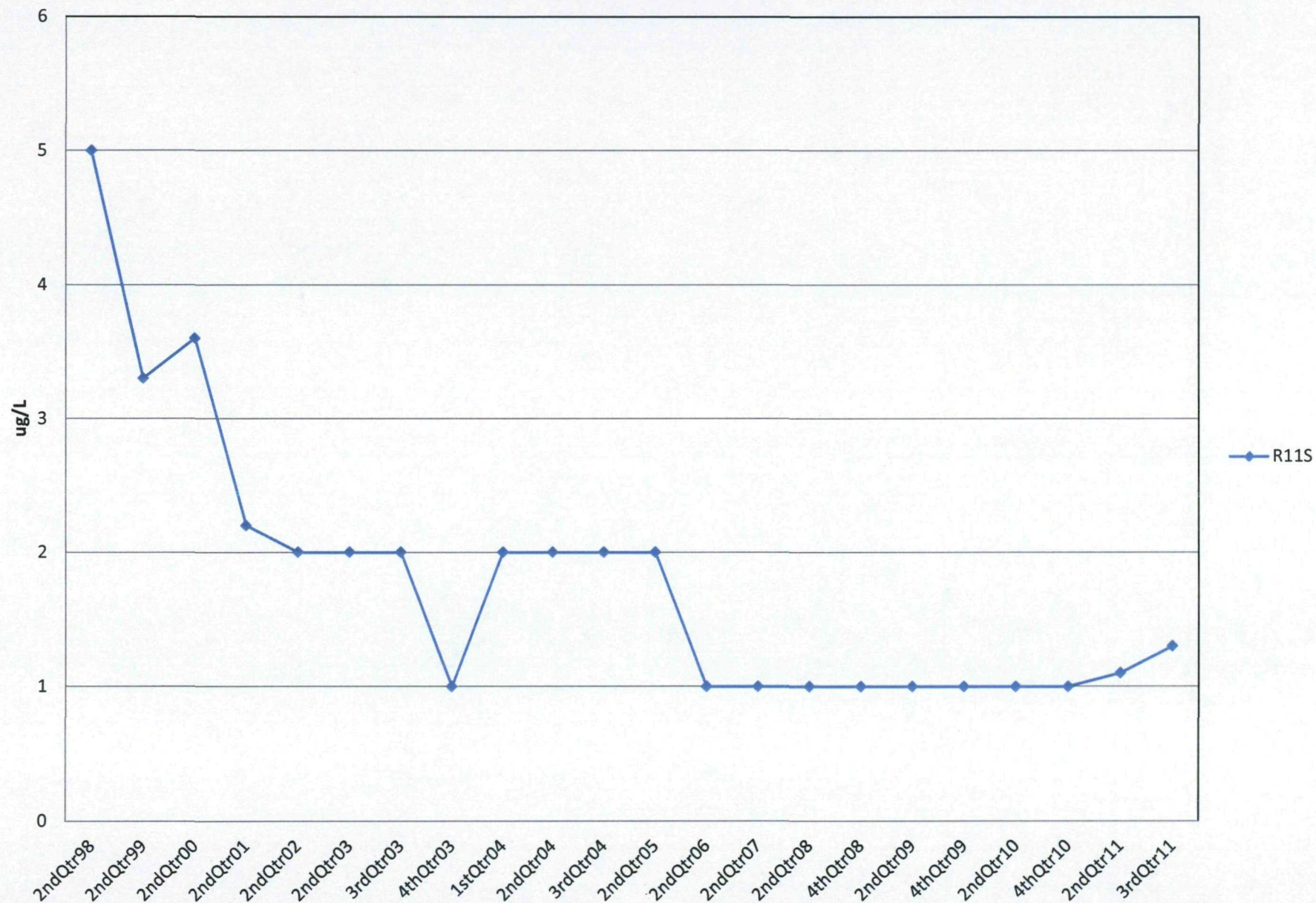
### **Graphical Trend Analyses**

Winnebago Landfill  
Northern Unit  
Specific Conductance





Winnebago Landfill  
Southern Unit  
Trichloroethene



## **APPENDIX D**

### **Statistical Method**

## **Statistical Analyses Method**

### **References:**

1. 35 Illinois Administrative Code 811.320
2. Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance, USEPA, March 2009

Background quality shall be determined using the statistical techniques set forth in 35 IAC 811.320(e) and the facility permit. The data was tested for normality using the Shapiro-Wilk normality test. If the data was found not to follow a normal distribution, a nonparametric statistical method was utilized. The data was then examined for outliers. After the outlier test, the percentages of non-detect values (NDs) were calculated for each parameter to determine the applicable ND treatment method, if any. Upon completion of the treatment of non-detect values, the prediction limit for each parameter was calculated using the mean, standard deviation, and the appropriate t value. The statistical analysis uses a one-tailed test to determine an upper limit of significance. The upper prediction limit is the concentration for the probability that the constituent can be measured without constituting a statistical increase above the background. Any concentration found below this limit is regarded as falling within the normal statistical population.

### **Statistical Method**

The statistical method employs either the 99% or 95% prediction limit in accordance with the facility permit. The prediction limit incorporates the mean, standard deviation, number of samples, and the Student's t value in the calculation to determine general background groundwater quality. An upper prediction limit is calculated for each individual chemical parameter. The well data from the site is evaluated statistically with samples collected during a minimum of four (4) consecutive quarters of background sampling.

### **Handling of Outliers**

Prior to statistical analyses the data set was evaluated for outliers. Outliers are defined as data points that vary significantly from the mean value for that data set. Outliers may represent sampling error, contamination from surface run-off, analytical laboratory error, or anomalous site conditions. Outliers, if not removed from the data set, can erroneously

increase the AGQS and minimize the occurrence of an exceedences related to a release from a waste unit. Once a statistical outlier has been identified, the concentrations are evaluated to determine the cause. If a valid reason has been determined for the outlier, the data point will be removed from the data set. If no specific reason can be documented, the point will be considered representative and included in the analysis. Statistical analysis will then be conducted as described below.

### **Handling of Non-Detects (NDs)**

Non-detect values (NDs) were handled according to the percentage of Non-Detects (%ND) present in the background sampling. The %ND was calculated for each parameter from the pooled background data of each well set. The data treatment was done according to the following criteria:

- a) For under 0% NDs, no adjustment is made to the values in the data set.
- b) For under 15% NDs, the value of one-half ( $\frac{1}{2}$ ) the reported Detection Limit (DL) was substituted for the ND value, and the mean and standard deviation were calculated using detected values with the substituted ND values.
- c) For 15-50% NDs, Cohen's Adjustment was used to adjust the mean and standard deviation. The adjusted mean and standard deviation was then used to calculate the prediction limit.
- d) For over 50% but not 100% NDs, the highest recorded concentration was substituted for the prediction limit.
- e) For 100% NDs, the Practical Quantitation Limit (PQL) will be substituted for the ND value. The mean and standard deviation was calculated using the substituted ND values.

### **Prediction Limit**

The statistical procedure was conducted according to the following steps:

1. Calculate arithmetic mean

The arithmetic mean was calculated using the pooled data for each parameter.

The arithmetic mean ( $X_b$ ) was calculated using the following equation:

$$X_b = \frac{X_1 + X_2 + \dots + X_n}{n}$$

where:  $X_b$  = Average background value

$X_n$  = Individual background value for  $n$  sample

$n$  = Number of background values

2. Calculate standard deviation

The standard deviation was calculated using the pooled data for each parameter.

The standard deviation was calculated using the following equation:

$$S_b = \sqrt{\frac{(X_1 - X_b) + (X_2 - X_b) + \dots + (X_n - X_b)}{n - 1}}$$

where:

$S_b$  = Population standard deviation

$X_n$  = Individual background value for  $n$  sample

$X_b$  = Mean (1)

$n$  = Number of background samples

3. Calculate the Upper Prediction Limit

The Upper Prediction Limit was calculated for each parameter using the mean (1), the standard deviation (2), the number of background samples, and the Student's  $t$  value. The Student's  $t$  value  $\sigma$ , is determined by the facility permit whether it is  $\sigma = 0.01$  (99% Confidence) or  $\sigma = 0.05$  (95% Confidence). The Student's  $t$  value also varies upon the number of background samples utilized in the calculations. For those parameters with 15% to 50% NDs, the Cohen Method was utilized to calculate the Prediction Limit. The methodology described in "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance" was used to calculate the Cohen Prediction Limit. The Upper Prediction Limit for the remaining parameters was calculated using the following equation:

$$PL = X_b + S_b \cdot t \cdot \sqrt{1 + \frac{1}{n}}$$

where:

PL = Upper Prediction Limit (Upper and Lower for pH)

$X_b$  = Mean (1)

$S_b$  = Standard Deviation (2)

$t$  = Student's  $t$  value at 0.01 or 0.05 significance

$n$  = Number of background samples



**APPENDIX E**  
**Statistical Calculations**

Winnebago Landfill  
Northern Unit  
Interwell AGQS Statistics

Parameter	Units	G09M								G09D							
		4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11	3Q11	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11	3Q11
Specific conductance	umhos/cm	876	1,482	1819	1,197	983	1,533	2,820	2,900	739	1,108	1,281	998	1,349	1,134	1645	1,544

Parameter	Units	G13S								G13D							
		4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11	3Q11	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11	3Q11
Specific conductance	umhos/cm	819	1,147	1,228	1,185	1,900	1,728	3,820	1,543	1,047	1,437	3,750	1,409	3,770	436	2,180	1,844

Parameter	Units	G20D								Normal	Nonparametric Upper
		4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11	3Q11	Distribution*	Prediction Limit**
Specific conductance	umhos/cm	493	564	609	1796	732	546	556	711	no	3,820

Notes:  
\*Shapiro-Wilk utilized to test for normality  
\*\*The maximum value was utilized as the nonparametric upper prediction limit

**APPENDIX F**  
Well Abandonment Documentation

15-36-200-009

42-09-366N

89-03-423W

6-185

DEPARTMENT OF PUBLIC HEALTH  
WINNEBAGO COUNTY401 Division Street  
ROCKFORD ILLINOIS 61104Phone: (815) 962-5092  
Fax: (815) 962-4203

## WATER WELL SEALING FORM

RETURN ALL COPIES  
TO WINN. CO. HEALTH DEPT.

## TYPE OR PRESS FIRMLY

This form shall be submitted to this Department not more than 30 days after a potable water well, boring or monitoring well is sealed. Such wells are to be sealed not more than 30 days after they are abandoned in accordance with the sealing requirements in the Water Well Construction Code.

- Ownership (Name of Controlling Party) Winnebago Landfill
- Well Location: 8403 Lindenwood Rockford Winnebago  
Address - Lot Number City County  
General Description: Section 36 Township 43 Range 1 (N) (S) (E) (W)  
SE Quarter of the SW Quarter of the NE Quarter
- Year Drilled 1988
- Drilling Permit No. (and date, if known) none obtained - Monitor Well
- Type of Well: Bored \_\_\_\_\_ Drilled X Other \_\_\_\_\_
- Total Depth 15 Diameter (inches) 2
- Formation clear of obstruction X yes \_\_\_\_\_ no
- DETAILS OF PLUGGING  
Filled with Bentonite from 15 to 0 ft.  
(cement or other materials)  
Kind of plug \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.  
Filled with \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.  
Kind of plug \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.  
Filled with \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.  
Kind of plug \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.
- CASING RECORD  
Upper 3 feet of casing removed \_\_\_\_\_ Yes X No 7  
If well casing consists of brick, stone, concrete blocks, porous tile, or other porous material, casing was removed to a depth of 10 feet below the surface \_\_\_\_\_ Yes \_\_\_\_\_ No  
All to be removed with Landfill expansion
- Date well was sealed: Month July Day 20 Year 11
- Licensed water well driller or other person approved by the Department performing well sealing: Winnebago Landfill D. B. Bix  
Name P.O. Box 5523 Rockford Complete License Number FC 61125  
Address City State/Zip

15-36-200-004

42-09-366N  
89-03-423N  
G-18-DDEPARTMENT OF PUBLIC HEALTH  
WINNEBAGO COUNTY401 DuSable Street  
ROCKFORD, ILLINOIS 61104Phone (815) 962-5092  
Fax (815) 962-4203

## WATER WELL SEALING FORM

RETURN ALL COPIES  
TO WINN. CO. HEALTH DEPT.

## TYPE OR PRESS FIRMLY

This form shall be submitted to this Department not more than 30 days after a potable water well, boring or monitoring well is sealed. Such wells are to be sealed not more than 30 days after they are abandoned in accordance with the sealing requirements in the Water Well Construction Code.

1. Ownership (Name of Controlling Party) Winnebago Landfill
2. Well Location: 8403 Linden wood Rockford Winnebago  
Address - Lot Number City County

General Description: Section 36 Township 43 (N) (S) Range 1 (E) (W)  
SE Quarter of the SW Quarter of the NE Quarter

3. Year Drilled 1987
4. Drilling Permit No. (and date, if known) none obtained - Monitoring Well
5. Type of Well: Bored \_\_\_\_\_ Drilled X Other \_\_\_\_\_
6. Total Depth 43 Diameter (inches) 2
7. Formation clear of obstruction X yes \_\_\_\_\_ no

## 8. DETAILS OF PLUGGING

Filled with Bentonite from 0 to 43 ft.  
(cement or other materials)

Kind of plug \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.

Filled with \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.

Kind of plug \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.

Filled with \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.

Kind of plug \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ ft.

## 9. CASING RECORD

Upper 3 feet of casing removed \_\_\_\_\_ Yes X No landfill expansion

If well casing consists of brick, stone, concrete blocks, porous tile, or other porous material, casing was removed to a depth of 10 feet below the surface \_\_\_\_\_ Yes \_\_\_\_\_ No.

10. Date well was sealed: Month July Day 28 Year 11

11. Licensed water well driller or other person approved by the Department performing well sealing: Winnebago Landfill Owner

Name P.O. Box 5523 Complete License Number 22 61125  
Address Rockford City State/Zip

8/88

This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosure of this information is mandatory. This form has been approved by the Forms Management Center.

IL 482-0631